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Q E W

MISSISSAUGA

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MTO emergency patrol vehicles can reach and assist disabled vehicles more quickly with the help of FTMS operators.



When notified by FTMS operators, police or other emergency vehicles can be dispatched to accident scenes quickly.

INTRODUCTION TO FTMS

A Freeway Traffic Management System is a hi-tech tool for managing the flow of traffic on an urban freeway to improve its safety, and efficiency by making the best use of the freeway's capacity.

The FTMS includes computerized vehicle detection, closed circuit television monitoring, ramp metering signals, emergency vehicle dispatch, changeable message signs for advisory information, and information distribution to the media.

A Short History

Freeway Traffic Management Systems have been successfully used by many large cities in the United States, Europe and Asia.

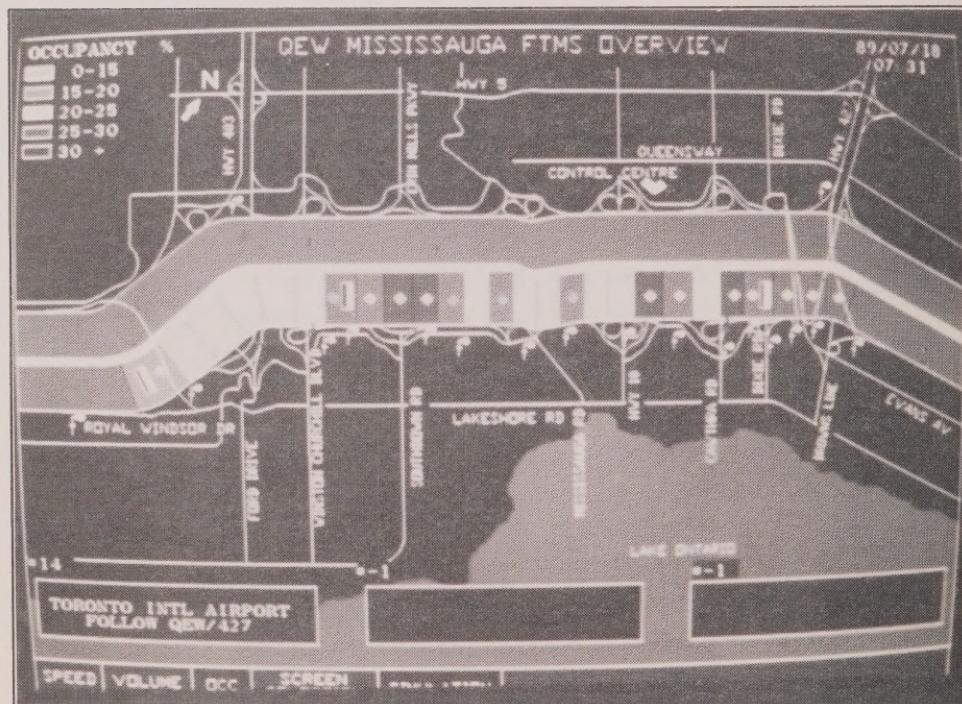
The Mississauga FTMS was the first system installed in Ontario when constructed on the Queen Elizabeth Way in 1975. It was designed to smooth the flow of traffic between Erin Mills Parkway and Hurontario Street where large numbers of vehicles entering the freeway during morning rush hours created stop-and-go driving conditions.

It soon proved its worth by enabling operators to quickly detect traffic slowdowns, disabled vehicles and collisions. The result was a reduction in traffic congestion, accidents and delays on the QEW.

Over the past 15 years the system has been expanded with small extensions so that it now extends from Royal Windsor Drive to Highway 427.



Loop detectors embedded in the roadway give continuous traffic volume readings which are fed into the FTMS control centre computer.



Traffic information from loop detectors is displayed to the operators on a colour graphics terminal.

SYSTEM OPERATION

Traffic flow on the eastbound QEW is monitored continuously by the use of vehicle detectors embedded in the road surface in each lane. These are installed at frequent intervals along the freeway, so that the system can count vehicles as well as calculate the speed and density of traffic flow.

The information collected by the detectors is transmitted to the control centre over a communication system installed along the highway. Information is then displayed to the operator on a computer terminal and a colour graphics system.

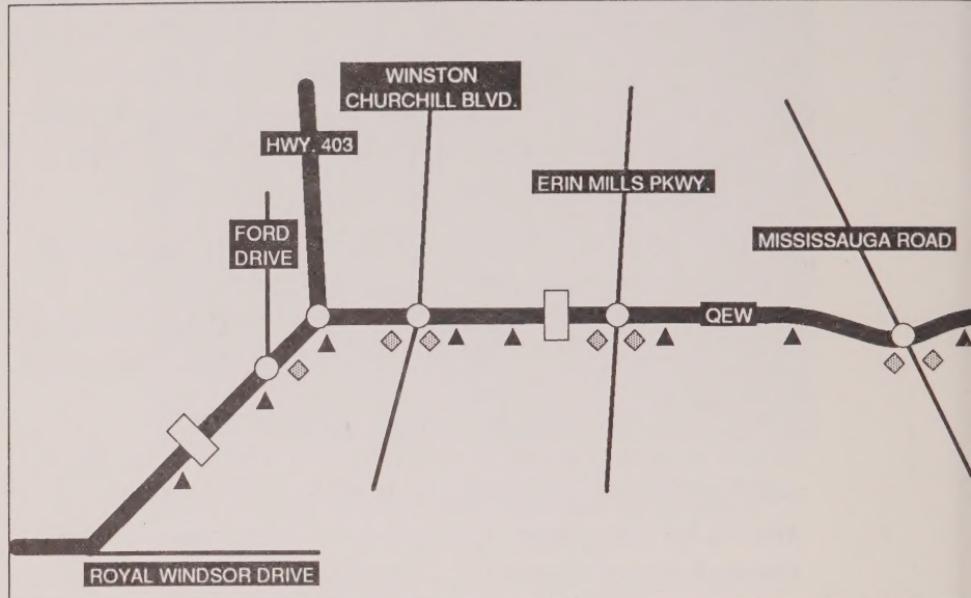
When an on-highway problem occurs which slows or obstructs traffic, the operator at the control centre is alerted by the system. The operator checks the problem through closed circuit TV; dispatches emergency help; transmits advisory information to the changeable message signs and makes traffic reports available to the media. A direct line to the Ontario Provincial Police ensures quick police awareness of the accidents.

Vehicle access to the freeway is regulated through the use of ramp metering signals on interchange ramps. These computer-controlled signals look like standard traffic signals and meter vehicles onto the freeway at a specified rate to maintain optimum traffic flows. At the same time queue detectors prevent back-ups on the access ramps.

Ramp metering is an integral component of FTMS, involving management of the number of vehicles entering a freeway, and the rate at which they enter. Experience shows that ramp metering shortens overall trip times for motorists, even though there are short waits at the ramp signals.

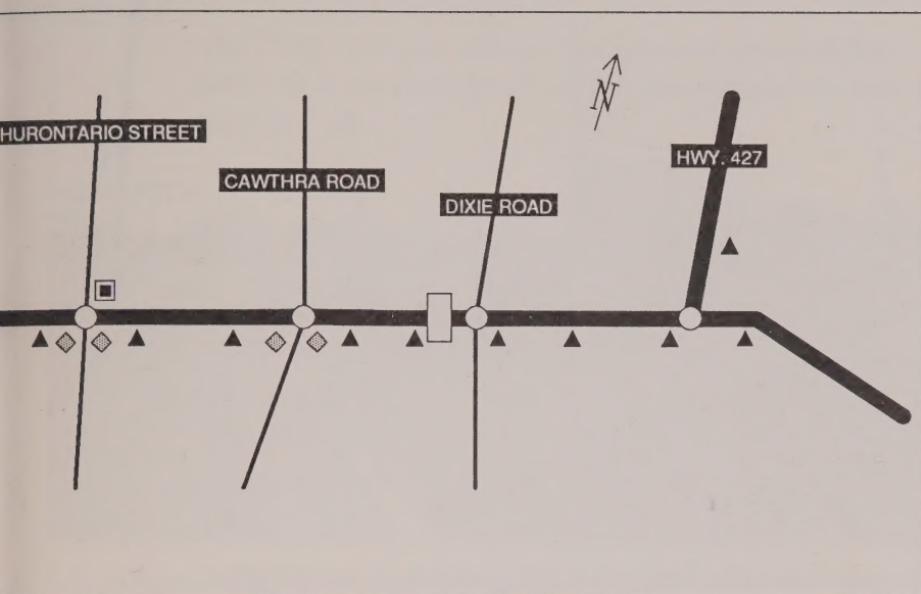
On the QEW ramp metering has been placed on east-bound access ramps between Ford Drive and Cawthra Road. It only operates for about three hours in morning

QEW MISSISSAUGA FTMS



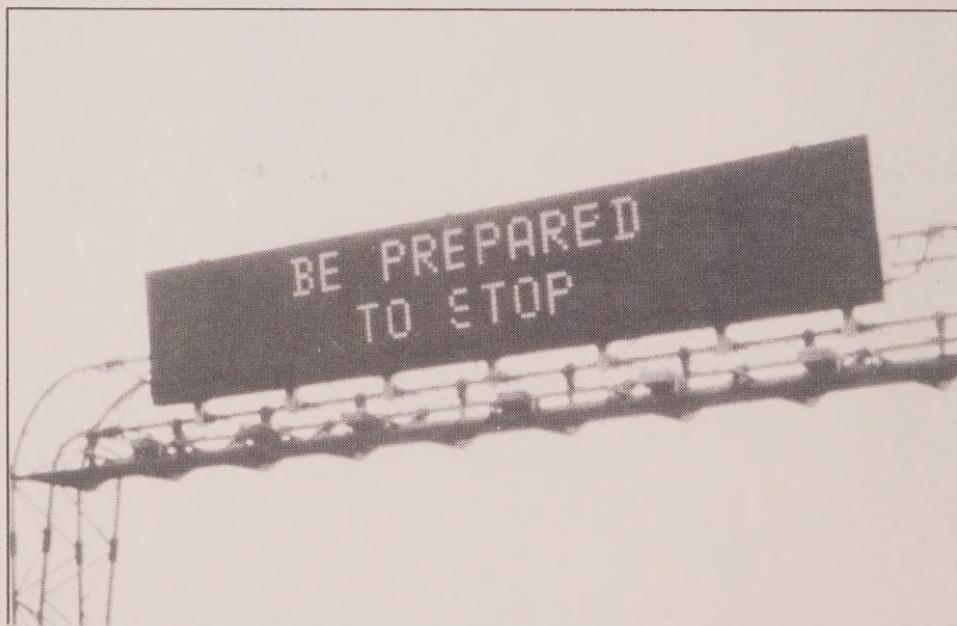
LEGEND:

- ▲ REMOTE TV CAMERA
- ◆ RAMP METERING
- CHANGEABLE MESSAGE SIGN
- CONTROL CENTRE





Traffic signals on ramps are used to regulate the flow of traffic onto the QEW. As a result freeway traffic moves more smoothly.



Changeable message signs are an important component of FTMS and can be programmed with messages to meet specific situations.

rush hours on weekdays, yet makes a significant contribution towards improvement of traffic flows on the freeway.

The FTMS is in operation 16 hours a day on weekdays allowing full coverage of both the morning and evening peak periods.

BENEFITS

What has the System Done to Improve Traffic Conditions?

The rapid detection of problems and prompt response of police and emergency services reduce traffic delays.

Controlled entry of vehicles onto the freeway reduces the “shock” effect to the traffic stream and improves the overall speed, flow and safety for vehicles, drivers and passengers.

Improvements resulting from the QEW-Mississauga FTMS include:

- 22% reduction in collisions;
- 45% increase in average speed;
- 21% reduction in overall delay.

Continuous collection of traffic data by the system also assists in monitoring increases in traffic volumes and detecting trends in freeway usage.

Everyone Benefits

- Daily commuters travelling during morning rush hours have more uniform traffic flow conditions, reliable advisory information, and increased roadway safety.
- All motorists benefit through improved safety and reduced fuel consumption.
- Commercial traffic benefits from reduced travel times and uniform traffic flow.



Remote controlled video-cameras help FTMS operators detect, locate and respond to vehicle breakdowns or accidents on the QEW.



The FTMS control centre is the focal point of all traffic monitoring activities.

Adjacent communities benefit from reduced air pollution and more effective utilization of available road capacity.

FACT SHEET

System Limits	Royal Windsor Drive to Highway 427
Length	19 km
Number of Cameras	18
Number of Detectors	190
Number of Ramp Metering Signals	10
Number of Changeable Message Signs	3
Communication Type	Coaxial Cable (Simultaneous Video and Data Transmission)

COST

What did the system cost?

Capital cost of the current QEW system was approximately \$3,500,000. Annual operating and maintenance costs are about \$420,000 per year.

FUTURE PLANS

The detector system is presently being expanded to cover the westbound QEW from Highway 427 to Mississauga Road to provide some assistance during the evening peak period.

Plans for further expansion of the system from Highway 427 to the Gardiner Expressway are now in the design stage and will eventually provide continuous coverage into the downtown area by interfacing with a proposed Metro Toronto system on the Gardiner Expressway.

FOR MORE INFORMATION

Call: the Head of Traffic Operations for Toronto District at (416) 235-5393
or
the Head of Freeway Traffic Management Section at (416) 235-3535

